Implemented by

2nd Regulatory Working Group Meeting

Energy Sharing: Legal Basis in EU Regulations with Implementation Models

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Comprehensive Technical-Regulatory Advisory to enhance RE-based share in electricity grids of Western Balkans

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Western Balkans

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1. INTRODUCTION

This report discusses research and implementation of energy sharing within the EU.

Energy sharing involves consumers controlling renewable energy installations collectively. The organization of Energy Communities enables this collective approach. Further refining the legislation with Renewable Energy Communities (REC) and Citizen Energy Communities (CEC) allows consumers to operate renewable energy systems, reduce energy bills, and become proactively involved in the energy transition.

The report is an introduction to energy sharing, considering that project implementation as well as the regulatory framework are still in the beginning stages. Energy stakeholders' acceptance and integration are ongoing processes that need a well-established dialogue. The report is structured as follows:

1. The **what** and the **why** of energy sharing within the overarching **goal** to provide equitable access to renewable energy assets for all consumers.
2. **Legal basis and Regulatory Framework** with examples of Member States with different regulations affecting energy-sharing initiatives.
3. **Energy Sharing Options**: Various models exist, including community-owned grids, virtual sharing, and smart energy sharing.
4. Key Considerations in the process of energy sharing
5. Overview of **Regulatory Status** in regards to Energy Communities and developments with REC, CEC, and Energy Sharing in the WB Region
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7. **Conclusions and Recommendations**: Energy sharing should be promoted, with some consideration of network tariff reforms and harmonization of information exchange processes.

1.1. What is Energy Sharing?

Energy sharing is **an emerging concept within the energy sector** related to a proactive engagement of the Energy Community (EC). The regulatory framework is in various stages of development in different member states. Yet, according to current directives, a working definition of energy sharing is "the exchange of electricity from generation facilities of an Energy Community (or its members) within the Energy Community itself or on an individual basis between its members, within the low or medium voltage." [1]

Another working definition is "the activity of administratively attributing renewable energy (RE) to consumers, where the renewable energy asset is controlled by those consumers in a shared role as a non-professional or non-profit producer."[2]

[1] Defined in the report "Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation" by the EU ASSET project.

[2] ENTEC – Energy Transition Expertise Centre, Multi-supplier models and decentralized energy systems: Energy sharing approaches (May 2023)

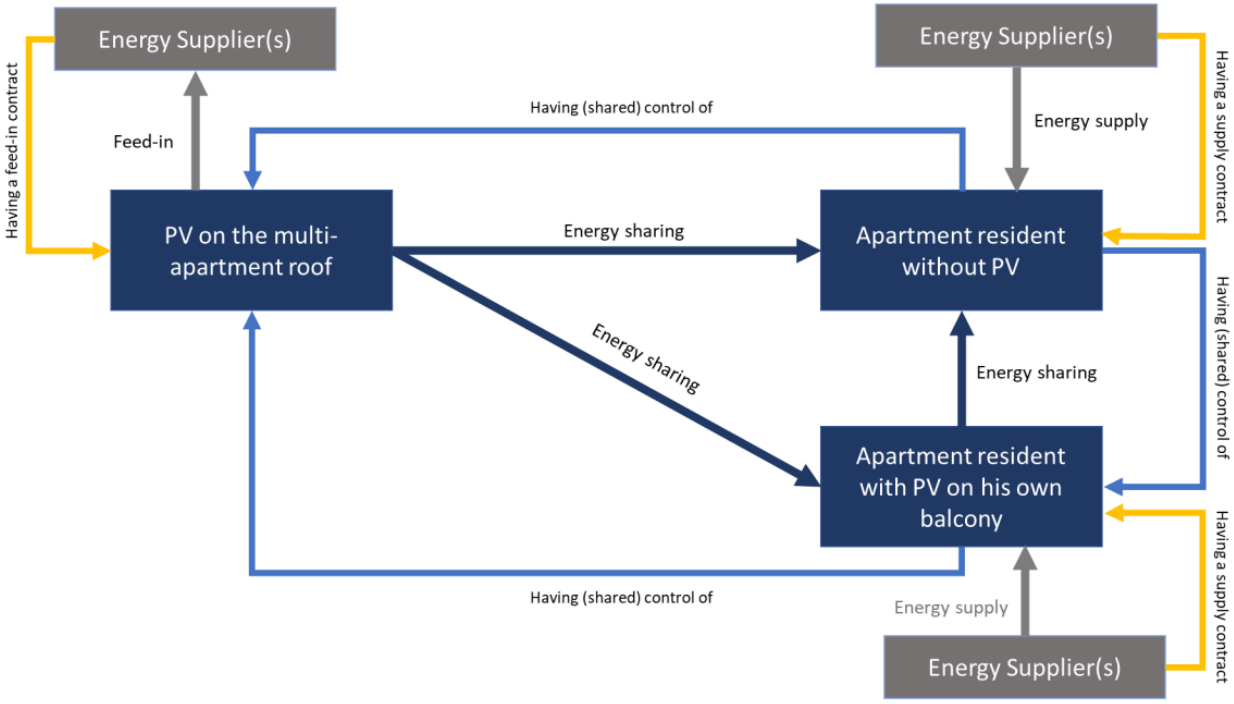


Figure 1 Visualzation of Energy Sharing

The Figure 1[3] demonstrates a visualization of how energy sharing enables renewable energy consumers to have a shared role in controlling RE assets either through ownership or leasing/renting. By giving consumers access to RE assets, they have an increased ability to participate and better benefit from having more control of the asset.

1.2. Why Energy Sharing?

Energy communities engage with energy sharing when their members generate their own renewable energy and share it with their neighbors, either in a multistory or multi-block building setting or a neighborhood of several households and small business entities. Energy communities may want access to the electricity market themselves to have control over locally generated RE, an overview of the cost of energy consumption, and the possibility of reducing added charges and intermediaries.

The simple reason may be the benefit of the Energy Community members and energy consumers with savings on energy bills. Therefore, it's essential to have insight and calculate the cost of self-

[3] Source: ENTEC – Energy Transition Expertise Centre, Multi-supplier models and decentralized energy systems: Energy sharing approaches (May 2023)

consumed energy and how it may be consumed and/or sold. The calculation needs to demonstrate that the energy cost is lower than if obtained from a traditional supplier or if using only self-consumption. The savings from participating in energy sharing depends on the cost of retail energy compared to the levelized costs of self-produced energy.

Charges, taxes, and levies that are applied differ in different national regulations, including the definition of self-consumed electricity and the period (e.g. day, hour, 15-minute intervals) that the produced energy can be directly deducted from the consumed energy. Also, there are different models of incentives and rewards for the energy injected into the grid, such as feed-in-tariffs and buy-back contracts. Differentiation is also by the type of RE technology and installed capacity, storage, as well as diversification of energy community members, such as consumers, prosumers, households, public institutions, transaction and operational costs (including subscription costs, dynamic energy price, and support certificate fees) incurred and recovered by the retail supplier and system operator.

A study of 39 countries[4] found that in a community consisting solely of households with solar panels (PVs) with no regulated charges, energy sharing can result in approximately **62.32% savings on monthly electricity bills** over a year for a household while considering all regulated charges, the annual savings decrease to **18.65% of the monthly electricity bill**. By introducing flexible assets or adding consumers to the prosumer members, the community can potentially increase the benefits of energy sharing. Another factor is that if the shared energy is from a central installation, the community cost savings are approximately five times greater than the distributed solar rooftop production scenario. The results demonstrate that multi-apartment buildings or suburban/rural areas, where collectively owned generation units, can be set up near community members. It's important to consider that community members may derive greater benefits from energy sharing compared to prosumers who share energy. However, the absence of local self-consumption lowers the savings, which are subject to charges, taxes, fees, and levies that apply to shared energy. Again, this is different for different countries.

The table below demonstrates the average benefits of collective self-consumption across countries studied in the study mentioned above (Belgium, Denmark, France, Greece, Italy, Portugal, and Romania) for market conditions in 2020 and 2022 and a 100% solar or 50% solar / 50% wind generation mix.

[4] From Energy Communities Repository “Energy Sharing for Energy Communities: A Reference Guide”

Year of the data used	2020		2022	
Degree of self-consumption	Collective		Collective	
Generation mix	100% solar	50% solar / 50% wind	100% solar	50% solar / 50% wind
Self-consumption (%)	39.69	66.12	39.44	65.96
Benefit of self-consumption (€)	272.53	442.04	586.00	930.24
Benefit of surplus energy sold (€)	61.57	33.69	292.30	148.88
Total benefits (€)	**334.10**	**475.72**	**878.30**	**1 079.12**
Investment cost (€)	2 234.92	2 447.29	2 234.92	2 488.72
Payback period for constant market conditions (years)	7.22	5.59	2.57	2.33

Figure 2 Study of the benefits of energy mix in self-consumpton[5]

The main goal of energy sharing can be summarized as enabling wider access to RE assets or equality in access to RE. This means more people (Energy Community members) may participate and benefit from RE projects.

2. LEGAL BASIS AND REGULATORY FRAMEWORK

The EU Internal Electricity Market Directive (IEMD) and the Renewable Energy Directive (REDI) recast provide the basis for energy-sharing activities within energy communities. This way of organizing energy production, combined with growing knowledge of the efficient use of smart meters, the evolution of digital platforms, and organizational and business models, is providing ways to potentially better distribute economic value for energy communities.

The European Commission Clean Energy Package promotes the active participation of consumers in energy systems. Some EU Member States are implementing this framework by stimulating development and support to energy communities and collective renewable production. This can be done through a variety of organizational models and financing incentives such as the Cooperative Energy Production Subsidy Scheme, and Development Fund for Energy Cooperatives, which, in the case of the Netherlands, aims for 50% of production to be owned by the local environment (citizens and businesses).

[5] Source: Ovaere, M. (2023).

The EU's electricity market design reform provides a legal basis for energy sharing. The right of energy communities to share energy between their members or shareholders is clarified and reinforced. The "Directive on Common Rules for the Internal Electricity Market" (EU/2019/944) supports the implementation of Energy Communities.

The **Directive (EU) 2018/2001** (Article 2(15)) introduces the concept of jointly acting renewable self-consumers (JARSC) – a group of at least two cooperating renewables self-consumers who are located in the same building or multi-apartment block. Specifically, a **renewables self-consumer** is defined in Article 2(14) as "a final customer … who generates renewable electricity for its own consumption, and who may store or sell self-generated renewable electricity, provided that, for a non-household renewables self-consumer, those activities do not constitute its primary commercial or professional activity." Further, a Renewable Energy Community (REC) is defined in Article 2(16) as an autonomous legal entity based on open and voluntary participation and effectively controlled by shareholders or members found in the proximity of the renewable energy projects (which are owned and developed by that legal entity). The shareholders or members of RECs are natural persons, small- or medium-sized enterprises, or local authorities, including municipalities. It's important to consider that the primary purpose of RECs is to provide environmental, economic, or social benefits for its shareholders or members or for the local areas where it operates rather than financial profits.

Directive (EU) 2019/944 (Internal Electricity Market Directive) in Article 2, introduces the concept of a Citizens Energy Community (CEC) as a legal entity based on voluntary and open participation whose primary purpose is to provide environmental, economic, or social benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits.

It's important to note that all three concepts, JARSC, REC, and CEC, feature energy sharing, such as

CEC: Article 16 of Directive 2019/944 mentions the ability to arrange "the sharing of electricity produced by the production units owned by the community" among their members or shareholders based on market principles, even over the public network.

REC: Directive 2018/2001(71) states that "Renewable energy communities should be able to share energy produced by their community-owned installations".

JARSC: Directive 2018/2001 states, "Member States shall ensure that renewables self-consumers located in the same building, including multi-apartment blocks [...] are permitted to arrange sharing of renewable energy that is produced on their site or sites between themselves".

Specific national frameworks are being developed with implementation models across the EU. Given the concept's newness, experimentation and harmonization are required on national, regional, and local levels. Therefore, legal implications will continue to be assessed and further developed through the different business models. Systematic and well-monitored implementation is needed to identify which models can be workable and sustainable in the specific context of the country and region. A regulatory sandbox could be an option to further experiment with energy sharing in different countries.

More experience with Energy Communities enables the development of possibilities for setting up energy sharing initiatives. National legislation provides a framework for operating models and the basis for implementing them. Operating models can be combined regarding RE technology and individual and collective owners.

3. ENERGY SHARING OPTIONS AND MODELS

As noted, with energy sharing, households, businesses, and local authorities can jointly invest in and own shares in local production capacity, lowering their electricity charges. Consumers collectively operate renewable energy electricity at reduced cost with collective investments, service, and/or purchase agreements. This allows vulnerable consumers and tenants who become part of an energy community to benefit from the lower costs of energy sharing. The underlying goal is to increase equitable access to renewable energy.

Energy supply without a license is different from energy sharing in terms of balancing responsibility, as energy sharing is treated the same as production behind the meter. Participants sharing energy cannot cause imbalance and cannot be fined for it. Balancing responsibility and related costs stay in energy sharing without a license.

Energy sharing models are implemented in the context of an Energy Community between tenants within a building or between residents and businesses within a municipality if the residents and businesses are connected to the same medium-voltage substation (< 110 kV) on the electricity network.

To support DSOs beyond the limits of their grids, as more renewable energy is connected to the grid and overall, more processes to be electrified, such as driving and heating, energy-sharing options are being developed and implemented. Without the application of smart technical solutions, there is a rising burden on expensive grid reinforcement to feed more renewable energy into the grid, increasing overall energy costs.

There are different kinds of energy sharing options, with two main models' differences being physical and virtual:

- Virtual energy sharing over the grid is the more common form of energy communities that own and operate generations of assets use. As such, they share energy and profits within their membership base. Virtual energy sharing may be organized via one or more suppliers, who maintain an overview of production and consumption and supply additional energy if needed.
- Physical energy sharing tends to be location-specific, mainly for remote locations requiring a community-owned grid, such as a solution for an energy grid for an island with insufficient connection to the mainland.

Another option is smart energy sharing within energy communities, which aims to minimize the transport of electricity with members of the energy community to ensure that the electricity produced is immediately purchased, stored, or converted locally.

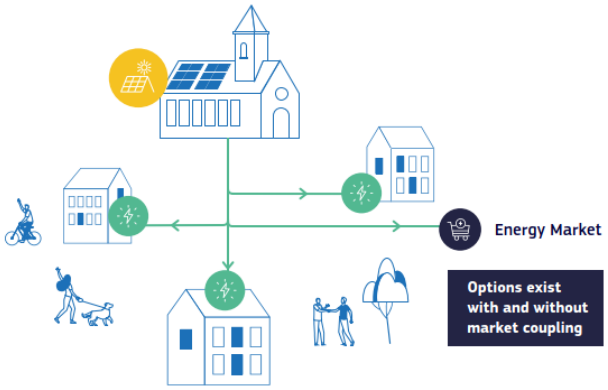
Energy communities also develop to use production and demand-side assets such as electric vehicle batteries, heating devices with domestic hot water, heat pumps, or hybrid heating to increase, shift, or reduce their electricity self-consumption.

Technological innovations are very important, including adequate ICT equipment, smart and flexible devices, and the option to use dynamic energy sharing keys, which have embedded time-differentiated price signals such as time-of-use distribution network tariffs or dynamic price contracts. Access to flexibility markets, which know when to provide which flexibility service, is a pre-requisite for flexibility services. These services may be provided directly by an energy community or through cooperation with an aggregator.

Developing sustainable energy-sharing business models will increase consumer control over the local electricity supply and access to affordable green power.

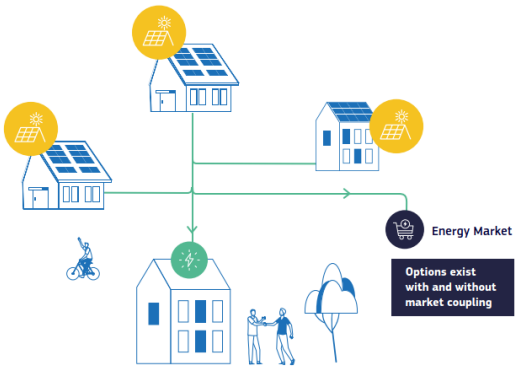
3.1. Models for implementing energy sharing[6]

3.1.1. Model 1: Community-owned centralized production of renewable energy grids



- RE is generated in one production location or building owned by an EC,
- EC members use the 'shared' energy behind individual meters (one per connection).
- Surplus or not shared energy is sold on the wholesale market by a supplier that is a member of the EC or an external party.
- Excess electricity is sold on the wholesale market, with EC being the balancing party responsible for ensuring that the installation does not imbalance the system.

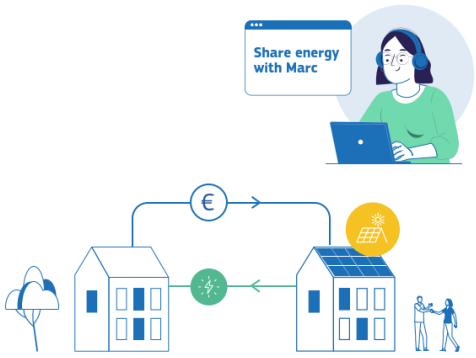
3.1.2. Model 2: Community-owned distributed power production of renewable energy



- RE is generated by individual members of EC and community-owned facilities
- EC members directly share RE without external supplier services.
- Grid operator supports keeping track of how much electricity each of them contributes and uses via a smart meter, calculating allocation shares from different metering points.
- Sharing electricity is based on pre-defined shares and prices. The energy not shared can be sold on the wholesale market by the residual suppliers
- EC can be a supplier to its members or work through an external supplier. In the case of selling to the wholesale market, the EC is responsible for balancing.

[6] Source for models and images: "Energy Communities Repository "Energy Sharing for Energy Communities: A Reference Guide"

3.1.3. Model 3: Individually Owned Distributed Production of RE by Community Members



- RE is generated by facilities owned by individual members of the energy community
- EC members share directly with other members without their production installations.
- Energy sharing is based on purchase agreements and can involve longer-term fixed-price purchase agreements or the use of a digital "peer-to-peer trading" platform, which helps energy communities understand how much energy is available, who needs it, and at what price.
- The grid operator helps participants keep track of how much electricity each of them contributes and uses via a smart meter, calculating allocation shares from different metering points.
- The energy not shared is sold on the wholesale market by the residual suppliers
- When selling excess electricity on the wholesale market, the energy community is the balancing responsible party.

Example of community energy facilitation in Belgium[7]

A social housing district in Mechelen a social housing estate was formed with 70 houses, installation of 729 solar panels with 288kWp production capacity, annual production estimated at 262000 kWh annually, saving 55T of CO2 every year (first phase in 2022). Citizen energy company Klimaan, together with Mechel city Woonpunt, and grid operator Fluvius, work collaboratively to ensure a consistent energy service, maximize solar panel coverage from the rooftops on social buildings and therefore reduce the risk of energy poverty. The production and consumption data are gathered on a platform by Fluvius and delivered to Klimaan, which further details the amounts to be paid per tenant.

Klimaan raised 250,000EUR required investment for the project, the tenants would not have to invest in advance, is responsible for the installation use and maintenance. The users contribute proportionally to their actual consumption; therefore, the social housing company is not exposed to market risks of fluctuating electricity prices. The kWh charged to tenants is determined by calculating the up-front investment, maintenance and administrative costs, while the monthly advance is charged on rental charges and a final account is made annually. The costs are kept low with a payback period of the loan set at 20 years, with arrangement that the installation is handed over to the social housing company at the end of the period. Klimaan charges the social housing company annually. Social tenants and energy community members contribute to the use and maintenance of the solar panel installation to keep the costs below the social electricity tariff. A challenge that needs to be resolved is the digitization of administrative management software for the involved parties – Fluvius, energy supplier, energy community – at lower costs management software.

[7] For detailed project information: Otterbeek, Mechelen - Klimaan CVSO energy cooperative in the Rivierenland

3.2. Working example of financial benefits from Energy Sharing

An example is taken with energy sharing in a multi-apartment building with the following participants: Five apartments with PV panels on their private terrace, consuming part of the production within the apartments and injecting the rest into the network, Five apartments without PV panels, taking electricity from the grid; A photovoltaic system located on the roof of the building, which injects production directly into the public network – the PV system is owned and operated by the ten residents involved in the sharing arrangement (not necessarily all the apartments in the building) showing what energy sharing means using the following conditions:

- The apartment building residents can share energy from the PV installation on the multi-apartment roof because they have shared control over this installation. For example, they jointly own this installation.
- The apartment building residents can share energy from the PV installations on the balconies of some of the apartments because some or all residents of the other apartments have shared control over this installation. For example, the balcony owner owns the PV installation, and he rents part of the installation to his/her neighbors.
- The apartment building residents have a contract with at least one Energy Supplier. Together (as shared owners of the PV installation on the multi-apartment roof), they have also concluded a contract with an Energy Supplier to feed in the electricity from this PV installation.

3.3. Advantages of energy sharing by visualizing the energy bill effect

Using the reference example of the apartment bloc, the ENTEC study provides a visualization of the energy bill effect from the point of view of consumers and producers.

As mentioned earlier, the energy bill consists of sourcing costs, network charges, taxes, and balancing costs, and although this is not always explicit in the case of the prosumer, there are charges for administration and billing. The model uses the following three categories: **energy** (sourcing/wholesale energy costs for either consuming or feeding in energy, including balancing and administration fees), **taxes** (VAT, energy taxes, and possibly levies for sustainable energy support), and **network-related costs** (grid charges including costs for grid losses).

Location matters for energy sharing arrangements, as the locational constraint can be applied to energy sharing in general or, in some cases, may benefit, such as network cost reductions. The possibility of sharing energy between a production location and a consumption location is measured by the impact on 'distance,' described in kilometers, address distances such as postal codes/house numbers, or grid topology distances with the same LV grid area behind the same transformer.

Some examples of energy-sharing implementations are intended to take grid topology distances (according to memoranda of national regulatory frameworks) into account, but address distances or kilometers are used in the actual implementations.

The model demonstrates financial benefits concerning these locational constraints using a generic description of locational constraints (house, building, proximity and whole country) to allow for comparisons between various Member States.

As in the energy bill, costs and revenues are not all calculated per kWh but can also depend on peak load. To compare energy sharing implementations in various Member States, the study analyses energy bills by looking only at the marginal price per kWh with questions such as “What are the costs of an extra kWh consumption shared vs. supplied vs. self-consumed? What are the costs and revenues of an extra kWh production shared vs. sold via an Energy Supplier? “

Figure 3 [8] visually demonstrates the energy bill effect mapping from the energy producers’ and consumers’ perspectives. The costs and revenues per kWh for all situations are visualized in the graphs where:

- the x-axis shows energy bill categories energy, network and taxes

- the y-axis shows the constraints by location (house, building, proximity, and whole country).

Energy bill effect mapping from the consumer’s perspective:

- Supply from the Energy Supplier: The effect on the network costs, the energy costs, and the taxes (only the VAT) is reduced
- Compared to self-consumption behind the meter’ is illustrated a situation where taxes apply to self-consumption behind the meter
- Compared to reference ii, energy sharing is less attractive per kWh. However, more kWh could be potentially shared than self-consumed.

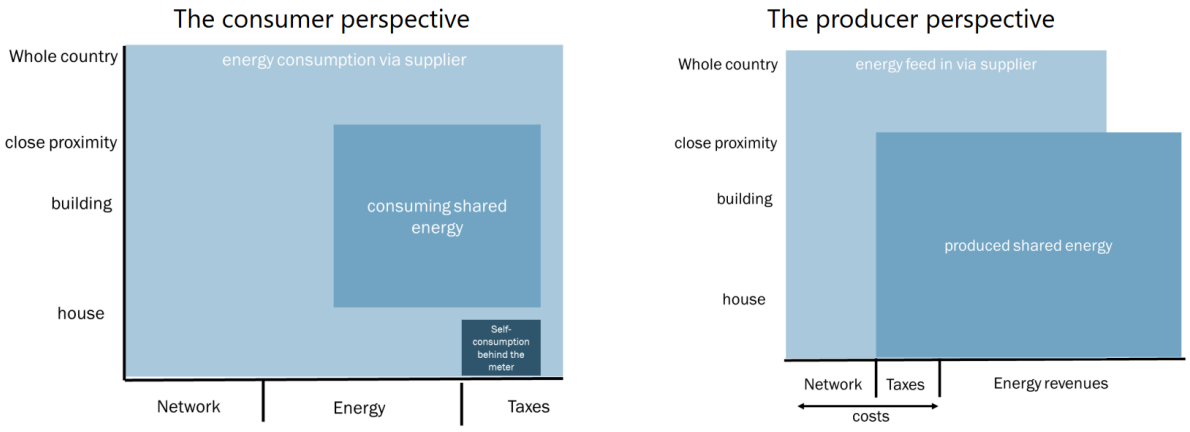


Figure 3 Energy Bill Effect Mapping

The example of a multi-apartment building with households with PV on the balcony and the multi-apartment roof PV installation demonstrates that the residents with PV receive more energy revenues for shared energy as they receive a better price from the consumers they share the energy with than for feed-in via the Energy Supplier, and all network costs are reduced.

[8] Source: ENTEC – Energy Transition Expertise Centre, Multi-supplier models and decentralized energy systems: Energy sharing approaches (May 2023)

It is necessary to integrate a combined effect of energy-sharing implementation on the residents of the multi-apartment building with insights from consumers' and producers' perspectives.

4. Key Considerations in the Process of Energy Sharing

1. You need to set up a legal entity—usually an Energy Community. This requirement is variable depending on the national context. Generally, whether or not to set up an energy community or legal entity depends on the size of the planned energy sharing and, therefore, whether it justifies the effort and costs of establishment.

2. Business model factors include the compensation for energy injected into the grid compared to incentives for shared electricity, including how self-consumed electricity is defined in regulations, specifically the intervals/period (hour/15min) in which the produced energy may be deduced from consumed energy. Detailed regulatory and financing considerations are critical and subject to a more targeted project-by-project assessment. The detailed modeling, which includes how much investment capital is needed, potentials for remuneration, and payback period, needs to be communicated comprehensively to existing and potential community members as well as further lenders in case of plans to grow the energy-sharing project in the future.

3. Roles and responsibilities for mobilizing an energy-sharing initiative:

- The registration process validates the energy-sharing initiative and connects the production site to the grid.
- Provision of information on energy sharing with practical technical and regulatory elements
- Collecting and processing metering data from the installations and meters with other market actors, such as residual suppliers and the community, to validate the energy-sharing initiatives for billing and other purposes.
- Allocation of shared energy is the administrative task of assigning production to the meters/ bills of participants.
- Issuing energy bills to members/customers, ensuring community self-consumed energy is accurately reflected in the bill.
- Ensuring that participating consumer needs are met with residual energy supply if produced RE is not sufficient.
- Balancing responsibility is required to ensure that the EC RE production installations do not result in an imbalance of the energy system.

Actors involved in mobilizing an energy-sharing initiative.

- **Energy community**—The role of EC depends on national legislation, which implies specific duties. In some countries, the duties of EC are given to other energy market actors.
- **DSO** – has specific duties prescribed under the REDII and IEMD to cooperate with ECs and facilitate energy sharing. Generally, DSOs have some of the following duties: information repository, updated IT infrastructure that accommodates energy sharing, smart meters rollout, registration of connecting initiatives, and allocation of shared energy.
- **Supplier—**Existing or alternative suppliers' duties depend on the agreement with the EC. If the supplier is providing the community with residual energy needs, that supplier issues

the energy bill. The supplier may also be responsible for calculating the energy-sharing metering data for the energy bill. This depends on national regulation.

- **Sharing facilitator**: National legislation, in a number of cases, allows for or recommends the appointment of a representative, manager, or organizer to act on behalf of EC. Clear communication with regulator and system operator, managing sharing coefficients, undertaking accounting functions, and acting as legal representative. This function may be taken by community members or a third party (including another EC).
- **Regulatory authority**: A governmental authority may have prescribed duties regarding registration and oversight of ECs, deciding on the fairness of remuneration for DSOs' services, and other technical rules and tariff structures applicable to the EC business model.

4. Energy Sharing parameters in the variable regulatory framework for energy sharing: It's helpful to consider boundaries around several parameters at the outset.[9]

- The type and size of the installation are based on production technology or capacity. For example, in Greece and France, energy-sharing installations are limited to 3 MW, while in Italy, the limit is 200kW.
- The geographic proximity of participating consumers implies the perimeter within which members or users of the installation need to be situated to participate in the energy-sharing project. In some cases, proximity will determine applicable energy-sharing network charges, such as in Austria and the Brussels-Capital Region.
- The deduction/matching period for sharing energy varies between 15 minutes (Austria, Flanders-Belgium, Croatia, Finland, Portugal) and 1 hour (Italy, Spain). This will directly impact the potential of the self-consumption rate, including how much savings participating consumers may expect.

5. Sharing coefficients

The sharing coefficient is a formula that determines how the shared RE production will be factored into EC members' energy bills. They are regulated at national levels, where, in some cases, a "static" energy sharing coefficient is used. The energy consumer receives a fixed pre-agreed share. In contrast, others allow ECs to choose their own dynamic sharing coefficient, with the actual demand in a given time (matching period of 1h/15min) determining the share of production each EC member receives. The DSO provides a standardized key to the ECs in most other cases.

6. The choice of RE technology is location-specific and requires a basic understanding of the cost/benefits and specific permitting requirements for a specific RE technology or, if possible, an energy mix, such as combining wind energy and solar PV, which can significantly increase self-consumption rates.

7. In most cases, Smart meters are a prerequisite for energy-sharing projects. In some cases, the DSO is required to install the smart meter upon EC request, with a dedicated timeline for when this installation will occur. To help users see how their energy-sharing activities impact their bill, some Member States have established rules governing the sharing of information by the DSO once energy-sharing initiatives are operational, including with other market actors, the energy

[9] Detailed information for different EU member states is available as an Annex in the Energy Communities Repository

community, and its members. Several Member States also require information collected by the DSO to be available online (Austria, Brussels-Capital Region of Belgium, France)

8. Considerations for using an **external service provider** can help to finance the installation for the EC, as well as manage the billing and distribution of benefits, undertake balancing responsibly, sell excess production on the markets, provide overall operation and maintenance, and other services that facilitate energy sharing. ECs need to be diligent the in choice and allocation of responsibilities and oversight of service providers as well as national regulations.

9. A national context may specify rules for registering an energy-sharing initiative. This information is usually available from the National Regulatory Authority (NRA), the DSO or another agency.

10. The rules for obtaining a grid connection are obtained from the responsible system operator, who has its own procedures. As the capacity for new grid connections is often limited, acquiring a grid connection permit is a competitive process.

11. The EC needs to communicate consumer rights and protection considerations, as well as overall rights and responsibilities, clearly to new members. The energy community generally has a membership/shareholder or customer relationship.

12. Information availability from public administration and system operators

For example, a few DSOs are designing ways to simplify the process of helping consumers learn about energy sharing and become aware of an initiative to join. For example, Spanish DSO L'ectra has created a service company, Elecsum, and a digital platform to make energy sharing easy for consumers.

5. Overview of Regulatory Status in regards to Energy Communities and developments with REC, CEC, and Energy Sharing in the WB Region

The participants of the 2nd Regulatory Working Group meeting shared the status of Energy Communities, REC, and CEC in current or planned legislation, as represented below:

Albania

Two framework laws are in place: Electricity sector law and renewable energy law. These laws do not include REC in their provisions (more likely). They are currently being revised, especially regarding the RE law. Therefore, REC may soon be included in the revised law. There are RE targets, and not for REC specifically

Bosnia and Hercegovina

In RS and Federation BiH, the RE laws have been adopted. In June 2024, NECP defined total RE share was submitted at 43.62%. This foresees the installation of 2000MW additional RE capacity with 1500 MW solar energy and 500MW from prosumers as a significant segment. ECs are considered very important for reaching targets and RE share by 2030. BiH federation adopted

the laws with the rulebook and ongoing public consultations. RE on quotas was adopted with cumulative amounts till 2030 for solar and biomass.

In 2020, the Electricity Law was adopted in RS, and only the definition of the concept of the Citizen Energy Community was provided, which means that energy may be produced for the CEC from any source. The RE law was adopted in 2022 and defined the Energy Communities, REC, and energy sharing. REC was defined as a legal entity aiming to satisfy its energy consumption needs. The members of REC can be individuals, private or public legal entities, or municipalities. The problem of not naming religious organizations as an acceptable typology to become a member of REC, which became evident in the discussion, was somewhat unforeseen. The legislation was conceptualized considering the definition of a private or public legal entity that would allow all relevant organizational forms to participate, including SMEs that are not active in RE production. The EC members are localized within the municipality of the project or the municipality bordering the project. The Regulatory Committee registers the EC after verification of main requirements – this means that the status of the EC can also be lost. The EC has a right to store the produced energy, market excess energy, and provide a premium (in cases of self-consumption for small installations of up to 150kW capacity and biogas up to 500kW). The program for RE production quotas for small installations and ECs has been included by year and technology until 2030. For example, the quota for solar energy is 25MW; from this, 1MW is reserved for ECs. The rulebook for ECs needs to be approved by the regulatory committee. The guidelines/rulebook for prosumers has been developed, while ECs guidelines/rulebook are still pending. This is clearly due to the complexity of many new concepts and elements. The presentations helped to provide insight into the complexity of REC and energy-sharing projects realization and gave essential considerations for going forward. It would be very helpful to provide examples of contracts that would provide the needed insight on regulating all the elements and relationships within the EC, members within the community, and other relevant parties such as the DSO. If possible, example contracts would also be very useful in providing an overview of necessary regulatory components and ensuring that all the main requirements are covered. This kind of contract would also be very helpful in defining the final guidelines/rulebook.

Kosovo

Since 2023, Kosovo has had the Law on Renewable Energy, and now RES is thoroughly addressed through this law. Currently, the Ministry is drafting the administrative guidelines arising from the law on RES, such as the RES target, which states that Kosovo has a target of 32% of RES in gross final energy consumption until 2030. Kosovo NECP 2025-2030 has foreseen the policies and measures that should be taken to reach 2030 targets. Policy Action Measures (PAM) no. 12, the promotion of RES in the Electricity Sector, foresees promotion in producing and consuming electricity from RES for Energy Communities, encouraging residents to collectively invest in and earn from RES projects. Meanwhile, through the Energy Strategy, Kosovo has foreseen to reach 1600 MW installed capacity of RES by 2031. 700 MW from solar projects (600 MW from large solar PV projects and 100 MW prosumers), 600 MW from wind, and 20 MW installed capacity from biomass. Regarding the regulatory framework for prosumers, the Energy Regulatory Office (ERO) has adopted the rules for self-consumption through RES, the administrative guidelines with all steps on how to become a prosumer, and technical criteria for self-consumption through RES connected to the distribution grid.

Montenegro

The adopted law on the use of RE on August 17th, 2024, is harmonized with the Directive on the promotion and use of RES. This law covers CECs. NECP is still under development and includes CECs. The pipeline and list of projects include EE improvement and renovation of public buildings. CEC will be promoted through this project. The challenges of CEC and REC adoption are that they are quite innovative and require the development of sustainable business models. This means that good knowledge and understanding of all the members is required. The lack of experience with these kinds of organizations brings uncertainty when introducing new concepts such as EC. This is one of the main reasons why their development is still delayed. For now, the RES law is adopted. The main stakeholders are public and private buildings, municipalities, and private investors who may realize the benefits of being connected by the Energy Community.

Serbia

Serbian Regulatory Agency representative provided a short overview of CEC and REC status in Serbia. REC is defined in RE law from 2021 with the transposition of the REDII directive. Some articles speak of the member's targets and incentives. CECs are not recognized by the energy law from 2021. The law is being amended with a new version, and consultations are being conducted with a more precise definition of CEC. Based on that law, the secondary law will be prepared based on the details to enable further implementation.

6. SWOT Analysis

A SWOT analysis is a strategy commonly used in strategic program planning. It provides a simple framework to scan both the internal and external environment. The SWOT analysis provides information that helps match the resources and capabilities to the environment in which it operates. It also acts as a filter to reduce the information generated to a manageable number of key issues.

SWOT analysis comprises four categories: strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are internal, while opportunities and threats are external factors, often beyond the entity's control, but that impact and/or influence considered activities. The following matrix presents the components of the SWOT analysis.

SWOT Matrix	**Advantages**	**Challenges**
Internal factors	Strengths	Weaknesses
External factors	Opportunities	Threats

A critical question that guides the SWOT analysis is: How can we support the emergence of the Western Balkan's CEC, REC, and energy sharing?

The SWOT analysis aims to generate ideas/solutions for developing a conducive regulatory framework for CEC, REC, and energy sharing in the WB.

Strengths

- Alignment with EU legislation
- Democratization of energy transition
- More controllable distributed energy resources
- Environmental benefits
- Community benefits – solidarity, job creation, EC profits can be used for community purposes

Weaknesses

- Installation of Smart Meters delayed in the majority of WB countries
- Availability of suitable Digital platforms and ICT equipment
- Secondary legislation (laws)
- Citizens awareness/skills – capacities
- Lack of good market practices
- Lack of standardization
- Need for aggregation for effective market selling
- Lack of citizens' investment resources

Opportunities

- Reduction in electricity bills for consumers
- Emission reduction – fight against climate change
- Local development and creation of jobs
- Rising electricity prices
- New business models
- Decrease of local peak demand
- Improved voltage profile
- Reduction of network losses
- Reduction or postponing of network investments
- Local government initiatives

Threats

- Subsidised Electricity prices for households
- Availability of funding for CEC/REC
- Requires continuous engagement of the CEC/REC community members

Based on participants' reflections, the RWG participatory event produced helpful information as the foundation, focus, and rationale for proposed regulatory solutions. Identified regulatory solutions include:

- Creation of the legal and regulatory framework for CEC/REC and energy sharing
- Promotion and awareness raising for citizens
- Training of citizens on electricity markets – technical and financial skills and advisory support

- Provision of financing lines and/or incentives to CEC/REC
- Electricity Market Development – emergence of Service Companies

7. CONCLUSIONS

Energy sharing is being implemented in several EU member states, but these are relatively new projects with a long-term impact that still needs to be better understood, as well as more specific regulatory parameters. For Western Balkans, one of the key technology needs is ensuring the distribution and installation of smart meters, which is the basis for implementing Energy Sharing.

To revisit the goal of energy sharing - access and affordability of renewable energy by allowing more consumers to participate in RE projects through membership in the energy community and ownership, renting, and leasing of RE assets. Supporting energy sharing builds momentum for new investments in RE production and other supporting technologies providing energy system flexibility. Another requirement is that energy can only be shared by non-professional producers. As described in directives on energy communities, energy sharing for both RECs and CEC, acting as renewable energy self-consumers, therefore is aimed at household customers and sometimes small businesses such as local shops or municipalities.

Currently, there are incomplete definitions of having control of RE installations as if they were rented or leased, which is very similar to energy supply. An example is to introduce production capacity limitations to exclude large enterprises from energy sharing and limit third-party facilitation. This includes also limiting the distance between production and consumption locations in cases where this is relevant.

Facilitation of energy sharing

As there are multiple actors in the energy-sharing process, the role of facilitation can also be implemented by different parties as long as the roles and responsibilities are clear. It's easiest to envision the DSO as a central and regulated party that provides overall facilitation for metering, connecting RE production sites to the network, and allowing flows of shared energy on public networks. Energy suppliers are the main facilitators in cases where there are central data hubs with competitive energy service markets.

Reducing Energy Poverty

A key advantage of energy sharing is reducing the energy bill by directly consuming energy from installations under the EC control. This leads to addressing energy poverty issues with energy sharing, especially by facilitating energy access, solidarity, and membership in the EC.

Energy Access: ECs are using a business model of "solar panels as a service" to increase affordability for vulnerable and energy-poor households. This approach enables beneficiaries to have access to energy without investing in equipment ownership and operation by enabling direct access to RE owned by a third party or by other community members.

Solidarity: Design mechanisms to share energy between EC members that promote solidarity within the community, such as ways to help members pay their energy bills over time and scalable contributions to community funds for EE or renovation works. Micro-donations from members and

other parties with a prioritization of economic returns towards further development of the solidarity mechanism.

Membership: Integration of the co-ownership concept for vulnerable and energy-poor households, giving them a chance to benefit from both energy and ownership. This may be arranged with pre-financing, lowering the price of shares/membership fees.